



Borough of Chorley.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

ON THE

EPIDEMIC

OF TYPHOID FEVER, 1924.

Public Health Department,
2 and 4, St. Thomas's Square,
Chorley.
December 31st, 1924.

H. E. MIDDLEBROOKE,
Medical Officer of Health.

Chorley:

S. FOWLER & SONS, PRINTERS, "GUARDIAN" OFFICE.

Public Health Department,
2 and 4, St. Thomas's Square,
Chorley,
December 31st, 1924.

TO THE SANITARY COMMITTEE.

MR. CHAIRMAN AND GENTLEMEN,

I now think I am in a position to present to you a complete report upon the recent explosive epidemic of Typhoid Fever in your Borough.

NUMBER OF CASES NOTIFIED.

Between September 20th and October 22nd, 52 cases of Typhoid Fever were notified to me.

In a previous preliminary report I gave you a brief outline of Typhoid Fever, its chief symptoms, etc., and before continuing it would perhaps be wise to again refresh your memory.

TYPHOID FEVER.

Typhoid Fever, or Enteric Fever, under both of which headings this disease is known, has not for some years past been epidemic in your Borough. Since 1912 the following number of cases have been notified to your Medical Officer of Health yearly.

1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
4	5	11	7	6	0	2	5	2	3	1	0

The disease is one which affects the intestinal tract and causes extensive inflammation of the intestines. The main symptoms are a general feeling of malaise, headache, persistent high temperature (the temperature chart being very characteristic), constipation, and this is followed by diarrhoea, the stools having a characteristic appearance, and are called "pea soup" stools.

INFECTION.

The infection of Typhoid Fever is transmitted by the excreta (either the urine or stools) from an actual case or from a "carrier," but very rarely, if ever, in any other way. The disease is transmitted from one person to another, usually by foodstuffs which have become contaminated with the excreta from either a person suffering from Typhoid Fever, or from a "carrier" of the disease.

CARRIERS.

Carriers are the great source of danger, and are usually persons who have had the disease and have to all intents and purposes recovered, but still, their excreta remains infective, that is to say, the bacillus is still present in their system. These people may carry the disease for years, and if engaged in the preparation or handling of foodstuffs may easily infect thousands of the community. It may be well here to mention the case of "Typhoid Mary," who was a "carrier" and a cook in America, who moved from situation to situation, and from town to town, and to whose source of infection many hundreds of cases of Typhoid Fever were traced.

TYPES OF BACTERIA.

Three types of bacteria have been isolated, and are called: (1) *Bacillus Typhosus*, (2) *Bacillus para-typhosus* "A," (3) *Bacillus para-typhosus* "B." The *Bacillus Typhosus* is the bacillus of the true Typhoid Fever, and the *Para-Typhosus* Bacilli simulate the true Typhoid Bacillus very closely, causing all the same symptoms, but in a rather milder form.

The *Bacillus Para-Typhosus* "B" is the Bacillus that caused the outbreak of the disease in your Borough.

INCIDENCE OF THE OUTBREAK.

The first case was notified to me on September 20th, and the last case on the 22nd October, and the intermediate cases on the following dates:—

Date.	No. of cases.					
Sept. 23	3
Sept. 26	1
Sept. 27	1
Sept. 28	1
Sept. 29	2
Sept. 30	6
Oct. 1	4
Oct. 2	4
Oct. 3	3
Oct. 4	5
Oct. 6	3
Oct. 7	3
Oct. 8	5
Oct. 9	1
Oct. 10	1
Oct. 11	1
Oct. 15	1
Oct. 16	2
Oct. 18	1
Oct. 22	3

At the time that these cases were being notified to me there was in the Borough a mild form of illness, which, I think, might easily be termed an ambulatory form of the disease, as several of these mild cases gave a positive Widal re-action to the *Bacillus Para-typhosus* "B."

DISTRIBUTION IN THE BOROUGH.

Of these 52 cases the distribution occurred as follows:—

44 houses were involved in 36 streets, and two houses had two cases in each, and two houses had four cases in each, and of the streets, four had two houses involved in each, three streets 3 houses, and two streets 4 houses.

21 cases occurred in East Ward, 11 in West Ward, 7 in North Ward, and 13 in South Ward. It will thus be seen that the disease was very evenly spread all over the town.

AGE INCIDENCE.

19 cases occurred in males and 33 in females. The oldest person attacked was a female of 68 years, and the youngest an infant of 1 years and 6 months, a male.

AGES.—YEARS:—							
	1 to 5	6 to 10	11 to 15	16 to 20	21 to 30	31 to 40	41 & upwards.
Males ...	9	6	...	1	2	...	1
Females	9	3	7	3	6	2	3
	<hr/> 18	<hr/> 9	<hr/> 7	<hr/> 4	<hr/> 8	<hr/> 2	<hr/> 4

Eighteen of these patients were under 5 years of age. Of the 19 cases in males, 15 were in children under 10 years of age. If we take these 15 cases occurring in children, and add the 33 females, this makes a total of 48 cases occurring in what one would expect to be the milk drinkers. I will again draw your attention to this in a later paragraph of this report.

DETAILED CHARACTER OF THE OUTBREAK.

The first case was notified on September 20th and cases continued to be notified on the dates shown in the paragraph marked "Incidence of the Outbreak." All the first cases were visited personally by myself in consultation with the Medical Practitioners, and I was able to confirm the diagnosis of the doctor in attendance, and satisfy myself that the disease was clinically Typhoid Fever, and this was confirmed later by bacteriological examinations of the blood. On

the 26th September bacteriological examinations of the blood showed the bacillus to be the Para-Typhosus "B." From the 26th September it will be seen that the disease began to make rapid strides, and each Ward was affected as shown by the Paragraph under "distribution." All classes and persons of various occupations were attacked, but principally the milk drinkers, namely, women and children. Very detailed enquiries were made into each case as to their milk supply, sanitation of the household, and possible sources of infection. Of these 52 cases it was ascertained that 41 purchased their milk from one dairy in the town, and the remainder from various dairymen. Out of the first 30 cases, 29 of them all purchased their milk from this one dairy. This began to make me very suspicious of this dairy's supply. This dairy in question received its milk supply from eight different sources, all of which, with the exception of one, are situated outside the Borough. This dairy was repeatedly visited, and individual samples were taken upon the arrival of the milk before it was mixed, and submitted for bacteriological examination. The *Bacillus Paratyphosus* "B" was not found in any of these samples. This dairy distributed the milk all over the town by six roundsmen and horses and carts, and was handled at the dairy by the foreman dairymen and a boy assistant. I satisfied myself that each individual roundsman and the other workers in the dairy were quite healthy, and no case of Typhoid occurred amongst these workers, in their families, or in any house in which they were living. Each roundsman distributing milk kept to his own round, and cases occurred in every district covered by the roundsmen.

The milk, when it arrived at this dairy from the eight farms, was immediately poured from the churns into a large container, from which it was pumped through a long pipe on to a milk cooler, and then collected into the delivery churns and handed to the distributors. This multiple handling of the milk I did not think quite satisfactory, as complete sterilisation of all the parts of this plant could not be accomplished, and the dairy was asked to discontinue its use. This they have done. The milk churns, before being returned to the farmers, were carefully washed and then were sterilised by placing them over a steam jet.

SANITATION OF THE BOROUGH. SEWAGE DISPOSAL.

Your Borough is mainly on the water carriage system, and the sewage is treated at the main sewage works, at the present, by chemical precipitation and sand filtration, at the Common Bank Works. These main works are supplimented by three small works at Cowling, Heapey, and Botany. Apart from the water closets there are 57 privy middens, with 61 closets attached, 40 pail closets, and 15 dry ash-pit closets. All these are on the out-lying borders of the town, and no case of Typhoid occurred in any of the houses where

these closets are installed. The remaining closets are water closets, and are made up of 7,270 Fresh Water Closets, and 987 Waste Water Closets. No case of Typhoid occurred in any house connected to a Waste Water Closet. At the moment of writing this report very extensive alterations are being made at the main Sewage Works at Common Bank to cope with the increased daily flow of sewage.

HOUSE REFUSE.

All house refuse, with a few exceptions, is deposited into covered sanitary ash-bins, which are emptied weekly by your own workmen, and the refuse is destroyed at your own Destructor Works situated in Stump-lane.

WATER SUPPLY.

The Water Supply of the Borough is from the Liverpool Corporation Waterworks situated at Rivington, and the Chorley supply comes from the particular reservoir known as the Anglezarke reservoir. It is an excellent supply, and I append a recent Bacteriological report.

MILK SUPPLIES.

The milk supplies of the town come from the farms and dairies situated in the Borough over which you have complete sanitary control, and from farms situated in the Rural District Council Area, over which you have no control. There were 32 registered cow keepers in the Borough at December 31st, 1923. Under the Milk and Dairies Amendment Act, 1922, the following were registered and certificates granted for the sale of milk.

Retail Purveyors and Producers	...	...	24
Retail Purveyors	...	...	10
Wholesale Producers	...	...	8
Retail Purveyors from outside districts	...	...	25
<hr/>			
Total	...	...	67

DETAILS OF ENQUIRIES.

Detailed enquiries were made as to the possible source of infection. The Rural District Council officials were asked on the 29th September if they had any cases of Typhoid in their area, and the reply was they had had no recent notifications of any cases. On October 1st the Medical Officer of Health to the Chorley Rural District informed me that a case of Paratyphoid "B" had been notified to him on August 2nd from a farm situate in Brindle in the Chorley Rural District, and he informed me that as he was away at the time the Deputy-Medical Officer of Health visited this case, and, after giving instructions as regards the disposal of excreta, etc., allowed the

case to remain at home under the charge of a general practitioner and a trained nurse, but he, unfortunately, did not give any instructions in regard to the milk being produced on this farm. On October 1st, in consultation with the Chorley Rural Medical Officer of Health, and accompanied by the Chorley Rural Sanitary Inspector and your Assistant Sanitary Inspector, I visited this farm, and I regret to say that I found the conditions anything but satisfactory.

CONDITIONS AT THE FARM AT BRINDLE.

Although the conditions of this farm at Brindle does not concern you as a Committee, I think you ought to be made aware of all the facts of the case as it has been fairly definitely proved that this farm was the cause of the epidemic, and was producing 60 gallons of milk per day, all of which was being sent into your Borough to the dairy named above.

OCCUPANTS OF FARM.

Owner of farm: Mr. R.

Residents: Mr. R., aged 54, farmer.

Mrs. R., aged 51, housewife.

William R., son, aged 26, farm duties.

J. R., son, aged 22, farm duties.

M. E. R., daughter, aged 17, housework and milking.

H. G. R., daughter, aged 13, schoolgirl.

T. E., aged 23, farmhand.

R. M., aged 16, farmhand.

The farm house is stone and brick built, and has two stories. On the ground floor are the kitchen, scullery, and sitting-room, and five bedrooms on the first floor. There is also a covered passage leading from the front to the back of the house, with a door in this passage opening into the living kitchen. It is here that the milk churns are stored, and at the time of my visit the churns had all the lids half off.

WATER SUPPLY.

The Water Supply is from a spring situate on ground much higher than the house, and is conveyed to the house by a pipe line to a wooden tank in a small, badly-paved yard just off from the kitchen door. The supply pipe end was practically touching the level of the water in the tank, and the tank contained a good deal of decaying vegetable matter and other debris. It is quite possible, although very difficult to prove, that this water tank was the common dipping place for all household uses, and that the milk utensils were at times washed there.

SHIPPONS.

These are two in number, and they are situated on ground a little way from the house, and at a lower level. The floors are paved with brick, and in the smaller shippon especially, are very sadly out of repair. The floors and walls were in a very dirty condition, the linewashing apparently being long overdue.

PIGGERIES.

Next the larger shippon, and just in front of the privy are two pigstyes containing pigs. Pigs are also kept in a stable, and the drainage from these pigs in the stable is percolating through the wall and running down into the public road.

DRAINAGE.

The drainage of the shippons runs into a tank at the back of the shippon. This is fitted with a pump for emptying purposes, but at the time of my visit the tank was full and overflowing into the field.

PRIVY MIDDEN.

The privy midden is situated behind the larger shippon, with the ground sloping sharply from behind. Any soakage from this midden would probably mingle with the overflow from the drainage tank of the shippon.

MILCH CATTLE.

The milking herd at this farm consists of 30 cows, whose average daily yield was about 60 gallons. This milk was up to the 30th day of September sold wholesale to the Chorley Co-operative Society, upon which date the contract with the Society ceased. After that date it was sent to the Cambridge Dairy, Bootle.

The farm does not possess any adequate dairy for the cooling and storing of milk.

The Co-operative Society collected the milk with their own motor van.

HISTORY OF THE ONSET OF CASE OF TYPHOID AT THE FARM.

The patient, H. G. R., aged 13, was indisposed some time in the middle of July. On the 25th July a Doctor was called in, and on the 2nd August, the case was notified as Paratyphoid Fever.

The patient was isolated at home, and a nurse attended her for about a month until convalescence. The infected room, bedding, etc., was sprayed with Formalin and fumigated with Formaldehyde on October 3rd.

At the time of this girl's illness the bedrooms were occupied as follows:

- No. 1. By the patient.
- No. 2. Her mother and Sister of the patient.
- No. 3. Father and son.
- No. 4. Farm hand and two casual Irish labourers.
- No. 5. The nurse.

The other farm hand slept in the granary, and the second son occupied a hut in a field some little distance from the farm house.

EXCRETA FROM PATIENT.

The excreta from the patient was buried in a field adjoining the house, and covered with disinfectant, as were supposedly all the slops from the washing up of utensils in the sickroom.

All this work in connection with the patient was supposedly done by the trained nurse, but as this nurse was frequently absent for considerable periods, some part of this washing up must have been done by some of the other members of the household. The washing of soiled linen from the sick room was done in the house scullery by the mother, and she was occasionally assisted by the daughter, M. E. R., who also did the milking. It is quite conceivable that the milk could easily become contaminated by the daughter who did the milking and household duties, bed making, and washing, cooking, etc. Later the following facts were elicited from the mother: That Mr. R., the farmer, had been ill with feverishness and diarrhoea at the beginning of September; also the daughter, M. E. R., was ill with the same symptoms in the middle of September, and one of the farm hands and one of the sons had symptoms something similar but not so acute about the same time. The father, Mr. R., is a mentally defective, and not very careful or cleanly in his habits, his clothing and his hands at times being smeared with foecal matter. This man also assisted at times with the milking. I do not think there is any doubt that the other members of the family contracted the disease from H. G. R. From the above facts, many more of which I have in my possession, I think I have given you sufficient data to show you how this milk supply became infected. The majority of these facts have been supplied to me by Dr. Fisher, the Assistant County Medical Officer of Health.

It has since been proved by Bacteriological examination that Mr. R., M. E. R., T. E., and R. M. suffered from Typhoid Fever, and were still infective on October 1st. All these persons have since been removed to the Isolation Hospital.

INCUBATION PERIOD.

The incubation period of Typhoid Fever is from 5 to 23 days (usually 12 days). The disease first showed itself in your Borough on the 15th September, and, in my mind, the milk was infected in the latter days of August, and probably remained infected up to the middle of September.

On September 29th samples of the infected milk were submitted for Bacteriological examination, but the result of this examination was negative, that is to say, the *Bacillus Typhosus*, or *Bacilli Paratyphosi* were not isolated. This, however, does not prove conclusively that the milk was free from infection.

ACTION TAKEN BY YOUR PUBLIC HEALTH DEPARTMENT.

Immediately the outbreak began to assume the seriousness of an epidemic I at once asked for a special meeting of the Health Committee, and asked for plenary powers, which you immediately granted, and I presented to you a preliminary report. A further special meeting was also held on October 15th, when I again presented a supplementary report to you.

I also issued special posters, and advertised in the local Press advising the general public as to what precautions could best be taken re the boiling of all water, milk, etc., and for the general public to be especially careful in regard to all foodstuffs, and more especially with such foodstuffs as ice cream, confectionery, shell-fish, watercress, etc., all of which can easily become contaminated.

Anti-Typhoid Vaccine was immediately stocked in the Public Health Department for Prophylactic purposes, and was supplied free to the medical men upon request, and anyone upon application could be inoculated free at the Public Health Department.

The whole of the Public Health Staff, including the workmen handling infected clothing, bedding, etc., and the whole of the School Medical Service Staff were inoculated by me.

Extra special precautions were taken in keeping a very sharp look out upon all the food-producing premises in the Borough, and special instructions were given to these producers.

Disinfectants were supplied freely and liberally to all classes of the community. The Borough Surveyor's Department were warned to pay special attention to the street gullies and drains, and were liberally supplied by the Health Department with disinfectants.

The Sewage Works were warned of the danger, and none of the dried sludge was allowed to be removed from the works during the epidemic. All this sludge was treated liberally with Chloride of Lime.

Extra care was shown in the supervision and keeping clean of the public lavatories and conveniences.

Immediately a case was notified the house was visited and arrangements were made for the patient to be removed to the Isolation Hospital. After this was accomplished the premises were thoroughly disinfected and all soiled bedding, etc., was taken to the Town's Yard, and passed through the steam disinfecter, and I have insisted that before any case was allowed to return home from the Isolation Hospital that negative bacteriological results should be obtained from the urine and faeces of each patient, thus preventing any "Carriers" coming back into the Borough.

NUMBER OF CASES REMOVED INTO HOSPITAL.

Out of the 52 cases reported, 42 were removed to Hospital. The cases remaining at home were for the most part cases who could not be removed owing to their condition, or for whom adequate isolation, and proper nursing could be provided in their own homes.

FATAL CASES.

There were two deaths out of the 52 cases, one in an infant of two years, and one in an adult female aged 26 years. This latter case was primarily diagnosed as Acute Appendicitis owing to the pain in the Right Illiac Fossae, and was operated on for this condition. The death of the child was reported to me on the same day that I received the notification. The other case died in the Isolation Hospital.

DR. SHAW'S VISIT.

Dr. Shaw, one of the Ministry of Health's Medical Officers, visited the Borough on October 8th, and stayed three days. Immediately upon his arrival I placed the whole of the available facts before him, and handed over to him copies of all notes and reports, etc. He also visited the Rural District and the Isolation Hospital, and has presented a report to your Council.

SECONDARY INFECTIONS.

Between October 22nd and December 16th, a further 5 cases have been notified. These are all secondary infections, and could all be traced to the primary outbreak. Of these 5 cases one proved fatal, and was in a child of 3 years of age, and was complicated by Double Pneumonia. Of the remaining 4 cases, three were removed to the Isolation Hospital, and all four have recovered. Up to and including December 31st no further cases have occurred.

CONCLUSIONS.

I think it has been fairly conclusively proved in the foregoing paragraphs of this report that your Council were in no wise responsible for this very serious outbreak.

Whilst not upholding that everything is perfect in your Borough, I would recommend you strongly to pass, if possible, new by-laws in regard to the sale of all foodstuffs, and more especially those which can become easily contaminated, such as ice cream, shell fish, meat pies, confectionery of all sorts, milk, etc.

I should like to thank all the Medical Practitioners for their very loyal co-operation with my Department, and also the various manufacturers and others who co-operated in helping to stamp out the infection.

In concluding this report I feel that I have hardly done justice to the subject, but I shall be very happy to supplement it by any questions that may be raised at any time.

I beg to remain,

Mr. Chairman and Gentlemen,

Your obedient servant,

H. E. MIDDLEBROOKE,

Medical Officer of Health.

The Clinical Research Association Ltd.,
Watergate House,
York Buildings,
Adelphi,
London, W.C. 2.

BACTERIOLOGICAL REPORT OF CHORLEY WATER SUPPLY.

Bacteriological examination by cultural and microscopical methods of the sample of water, marked M. O. H., Chorley (Chorley Borough), collected on 11/8/24, 10-45 a.m., and received here on 12/8/24, 9-20 a.m., has given the following results:—

QUANTITATIVE.—The average number of organisms, producing visible colonies on gelatine plates incubated at 20 deg. C. for 3 days is found to be 61 per c.c.

The average number of organisms, producing visible colonies on agar plates incubated at 37.5 deg. C. for 2 days, is found to be 7 per c.c.

QUALITATIVE.—B. Coli not found in 100 c.c.

Streptococci not found in 30 c.c.

B. Enteritidis Sporogenes not found in 100 c.c.

The result reveals no evidence of excremental contamination and from a bacteriological point of view the water is of good quality.

LIST OF CASES.

Date.	Initials.	Age.	Sex.	Street.	Ward.	Bacterio- logical Result.	Isolation.	Termina- tion of Case.
Sept.								
20	J.W.	7	M.	Blackstone Road	E.	Pos.	Hospital	Recovered
23	C.R.	2	F.	The Creseent	N.	—	Home	"
23	J.B.	2	F.	Stump Lane	E.	—	"	"
23	N.H.	3	F.	Weld Bank Lane	S.	—	"	"
26	W.B.	2	M.	Cavendish Street	E.	Pos.	Hospital	"
27	A.E.	12	F.	Blackstone Road	E.	"	"	"
28	A.F.	26	F.	Seymour Street	E.	—	"	Died
29	E.H.	9	F.	Ersikine Road	E.	Pos.	"	Reecovered
29	R.G.	3	M.	Congress Street	N.	"	Home	"
30	M.S.	6	F.	Northumberland St.	S.	"	Hospital	"
30	E.S.	13	F.	Northumberland St.	S.	"	"	"
30	S.H.	4	M.	Botany Brow	N.	"	"	"
30	M.P.	3	F.	Poor Law Hospital	E.	"	"	"
30	D.J.	2	F.	Charnock Street	E.	—	Dead	Died
30	A.S.	3	M.	Longton Street	E.	"	Hospital	Reecovered
Oet.								
1	S.Y.	14	F.	Duke Street	S.	"	"	"
1	F.A.	2	M.	Baek Street	S.	"	Home	"
1	A.M.	6	F.	Parker Street	N.	"	Hospital	"
1	A.N.	58	F.	Leigh Row	S.	Neg.	Home	"
2	A.H.	23	F.	Blackstone Road	E.	Pos.	Hospital	"
2	J.H.	25	M.	Hamilton Road	W.	"	"	"
2	E.O.	3	F.	Seymour Street	E.	"	"	"
2	F.J.	5	F.	Charnock Street	E.	"	"	"
3	M.G.	13	F.	Weld Bank Lane	S.	"	Home	"
3	A.M.	22	F.	Lorne Street	W.	"	Hospital	"
3	W.K.	1	M.	North Street	N.	"	"	"
4	F.C.	37	F.	Harrison Road	S.	"	"	"
4	B.W.	4	F.	Anderton Street	W.	"	"	"
4	W.T.	41	F.	Brighton Street	E.	"	Home	"
4	S.H.	19	F.	Weld Bank Lane	S.	"	Hospital	"
4	W.W.	1	M.	Halliwell Street	W.	"	"	"
6	M.B.	68	F.	Bolton Road	S.	"	Home	"
6	R.C.	10	M.	Harrison Road	S.	"	Hospital	"
6	F.J.	7	M.	Charnock Street	E.	—	"	"
7	F.S.	6	M.	Corporation Street	E.	Pos.	"	"
7	G.P.	19	M.	Longworth Street	W.	"	"	"
7	E.W.	15	F.	Foster Street	E.	"	"	"
8	F.G.	42	F.	Victoria Street	W.	"	"	"
8	F.A.	27	M.	Silverdale Road	E.	"	"	"
8	W.H.	25	F.	Wellington Street	N.	"	"	"
8	J.T.	4	M.	Northumberland St.	S.	Neg.	"	"
8	R.W.	2	F.	Fellery Street	W.	Pos.	"	"
9	W.A.J.	34	F.	Charnock Street	E.	"	"	"
10	C.G.	24	F.	Corporation Street	E.	"	"	"
11	M.H.	22	F.	Jackson Street	S.	"	"	"
15	I.G.	28	F.	Lyons Lane	E.	"	"	"
16	A.T.	14	F.	Buchanan Street	E.	"	"	"
16	J.I.	5	M.	Harper Street	N.	"	"	"
18	A.W.	2	M.	Anderton Street	W.	"	"	"
22	H.P.	58	M.	Longworth Street	W.	"	"	"
22	N.P.	11	F.	Longworth Street	W.	"	"	"
22	J.P.	10	M.	Longworth Street	W.	"	"	"
Nov.								
1	M.J.	8	F.	Walleetts Road	W.	—	Home	"
9	B.J.	10	M.	Poor Law Hospital	E.	Pos.	Hospital	"
17	D.H.	25	M.	Jaekson Street	S.	"	"	"
Dec.								
10	E.L.	3	F.	Seymour Street	E.	—	Home	Died
16	C.B.	9	M.	Walleetts Road	W.	Pos.	Hospital	Still in H'l

